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EXAMINER	
TAKEUCHI, YOSHITOSHI	
ART UNIT	PAPER NUMBER
1793	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,920	HAYNES ET AL.	
	Examiner	Art Unit	
	YOSHITOSHI TAKEUCHI	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-44 and 46-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-44 and 46-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 25-50 are presented for examination, wherein claim 45 is cancelled and claims 25-44 plus 46-50 are currently amended.

The 35 U.S.C § 112 rejections to claims 25, 30, 36, 41 46 and 48 for a lack of antecedent basis are withdrawn.

The 35 U.S.C § 112 rejection to claim 45 is withdrawn because the claim is cancelled.

Claim Objections

2. Claims **30**, **31**, **36**, **37**, **41** and **42** are objected to because of the following informalities: brackets around the range are improper. Appropriate correction is required.

3. Claim **25** is objected to for the lack of a comma between "carbon monoxide" and "methanol."

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim **25** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite because it is ambiguous as to whether the limitation "at least one non-hydrohalogenoic acid promoter" is optional. The examiner respectfully suggests moving this limitation prior to the phrase, "optionally at least one of."

6. Claims **25** and **39** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A claim limitation cannot be defined using "and/or." The use of "and" in conjunction with "or" is inherently capable of having two or more meanings, so is ambiguous

because "and" requires both elements to be present whereas "or" may be satisfied by either element. The examiner respectfully suggests using either "or" or "at least one of the following."

Claim Rejections - 35 USC § 103

7. The text of those sections of the Title 35 U.S. Code not included in this section can be found in a prior Office action.

8. Claims 25-31, 43-44, and 46-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al (EP 0752406) in view of Bruner, Jr. et al (US 5,710,325).

a. Regarding claim **25-29**, Baker teaches a process for the production of acetic acid by continuously feeding methanol or a reactive derivative and carbon monoxide to a liquid reaction composition comprising methyl acetate and a finite concentration of water, acetic acid and an iridium carbonylation catalyst (page 2, lines 23-31), where the catalyst system comprises an iridium carbonylation catalyst, methyl iodide co-catalyst, indium and acetic acid (page 2, line 23-27). However Baker does not teach the non-hydrohalogenoic acid promoter selected from an oxoacid, a superacid, a heteropolyacid or a mixture thereof.

Bruner teaches a process for manufacturing adipic acid by reacting water, carbon monoxide, pentanoic acid with an iridium carbonylation catalyst, methyl iodide co-catalyst, and an oxoacid promoter, such as phosphoric acid (column 2, lines 34-36, 42-46 and column 5, lines 26-27, 52).

As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use an oxoacid promoter with an iridium catalyst as taught by Bruner in the chemical system taught by Baker, in order to increase the chemical reaction of Baker,

since promoters increase the activity of a catalyst and the catalytic systems of Baker and Bruner are similar.

The limitation "for the production of acetic acid" is treated as intended use, and is not given patentable weight. See MPEP § 2111.02(II).

b. Regarding claims **30** and **31**, Baker in view of Bruner teaches the processes of claim 27 and 29 (see *supra*), but does not specifically teach a molar ratio of the oxoacid anion to the iridium. Baker teaches the molar ratio of promoter to iridium is a result-effective variable being "suitably present in the liquid reaction composition at a molar ratio of promoter : iridium of [0.5 to 15] : 1." (Page 3, lines 52-53).

Therefore it would have been obvious to one skilled in the art at the time of the invention to adjust the amount of acid promoter added to obtain the desired reaction speed. Furthermore, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454 (CCPA 1955). It would have been obvious to one skilled in the art at the time of the invention to optimize the carbonylation reaction by using the most effective molar ratios of the catalyst to the promoter. See also MPEP § 2144.05(II).

a. Regarding claim **43** and **44**, Baker in view of Bruner teaches the process of claim 25 which comprises at least one of ruthenium, osmium, rhenium, zinc, gallium, tungsten, cadmium, mercury and indium. (Page 3, lines 46-48).

b. Regarding claim **46** and **47**, Baker in view of Bruner teaches the process of claim 25 wherein the concentration of methyl acetate in the liquid reaction composition is in the

range 1 to 35% by weight, which includes 35% by weight (C_f the claimed 1-70% and 2-50% by weight). (Page 2, line 30).

c. Regarding claim **48** and **49**, Baker in view of Bruner teaches the process of claim 25 wherein the concentration of water in the liquid reaction composition is less than 6.5% by weight, which includes just under 6.5% by weight (C_f the claimed 1-15% and 1-10% by weight). (Page 2, lines 29-30).

d. Regarding claim **50**, Baker in view of Bruner teaches the process of claim 25 wherein the process is carried out as a continuous process. (Page 2, line 24).

9. Claims 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al (EP 0,752,406) in view of Bruner, Jr. et al (US 5,710,325) as applied to claim 26 *supra*, and further in view of Pesa et al (US 4,469,886).

a. Regarding claims **32-35**, Baker in view of Bruner teaches the process of claim 26 as discussed *supra*, but does not specifically teach a superacid promoter selected from HBF_4, HPF_6, $(CF_3SO_2)_2NH$, or $HCBH_6Br_6$ in conjunction with an iridium catalyst and methyl iodide co-catalyst. Pesa teaches a process for hydrocarboxylation of propylene to produce isobutyric acid in the presence of a catalyst (abstract) and a super acid, such as H_2SO_4, H_3PO_4 and HBF_4 (column 5, lines 57-60).

In promoting the reaction in Pesa, the H_2SO_4, H_3PO_4 and HBF_4 are treated as being equivalent. Bruner teaches the use of phosphoric acid as a non-hydrohalogenoic acid promoter, and Pesa teaches that HBF_4 is equivalent to phosphoric acid. As a result, it would have been obvious to one skilled in the art at the time of the invention to treat

HBF_4 and phosphoric acid as equivalent, as taught by Pesa, and substitute HBF_4 for phosphoric acid in the Bruner process. See MPEP § 2144.06.

b. Regarding claims **36** and **37**, Baker in view of Bruner and further in view of Pesa teaches the process of claim 32 (see *supra*), but does not specifically teach a molar ratio of the superacid anion to the iridium. Baker teaches the molar ratio of promoter to iridium is a result-effective variable being "suitably present in the liquid reaction composition at a molar ratio of promoter : iridium of [0.5 to 15] : 1." (Page 3, lines 52-53).

Therefore it would have been obvious to one skilled in the art at the time of the invention to adjust the amount of acid promoter added to obtain the desired reaction speed. Furthermore, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454 (CCPA 1955). It would have been obvious to one skilled in the art at the time of the invention to optimize the carbonylation reaction of Baker in view of Bruner by using the most effective molar ratios of the catalyst to the promoter as disclosed by Pesa. See MPEP § 2144.05(II).

9. Claims 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al (EP 0,752,406) in view of Bruner, Jr. et al (US 5,710,325) as applied to claim 26 *supra*, and further in view of Wegman et al (US 6,521,783).

a. Regarding claims **38-40**, Baker in view of Bruner teaches the process of claim 26 as discussed *supra*, but does not teach the non-hydrohalogenoic acid is selected from one of 12-tungstophosphoric acid, 12-molybdophosphoric acid, 12-tungstosilicic acid, 12-molybdosilicic acid and mixtures thereof.

Wegman teaches a catalyst system for the production of acetic acid by reacting carbon monoxide, methanol, an iridium carbonylation catalyst (column 40, line 6) and a super acid promoter (column 35 lines 63-64) or heteropolyacid promoter, such as molybdosilicates and tungstosilicates promoter (column 40, lines 31-35).

As a result, it would have been obvious to a person of ordinary skill at the time of the invention to use super acid promoter with an iridium catalyst as taught by Wegman in the chemical system taught by Baker, in order to increase the chemical reaction of Baker, since promoters increase the activity of a catalyst and the catalytic systems of Baker and Bruner are similar.

c. Regarding claims **41** and **42**, Baker in view of Bruner and further in view of Wegman teaches the process of claim 38 (see *supra*), but does not specifically teach a molar ratio of the heteropolyacid anion to the iridium. Baker teaches the molar ratio of promoter to iridium is a result-effective variable being "suitably present in the liquid reaction composition at a molar ratio of promoter : iridium of [0.5 to 15] : 1." (Page 3, lines 52-53).

Therefore it would have been obvious to one skilled in the art at the time of the invention to adjust the amount of acid promoter added to obtain the desired reaction speed. Furthermore, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454 (CCPA 1955). It would have been obvious to one skilled in the art at the time of the invention to optimize the carbonylation reaction by

using the most effective molar ratios of the catalyst to the promoter. See MPEP § 2144.05(II).

Response to Arguments

10. Applicant's arguments with respect to the rejections of claims **25-50** have been considered but are moot in view of the new ground(s) of rejection. See new grounds of rejection, *supra*.

a. The applicant argues that Bruner and Pesa are a "different technical field" than that of the instant invention.

In response, Bruner and Pesa are relevant since they show different types of acid promoters that can be used in conjunction with an iridium catalyst for different types of chemical reactions, not just merely the formation of acetic acid, which as discussed *supra*, is treated as an intended use.

b. The applicant argues that "Wegman states that the use of halide promoters is undesirable since they are highly corrosive…." (Response to the Office action, page 12).

In response, while Wegman states the use of halide promoters is undesirable, it implicitly states that halide promoters may be used. A patent may be used for all that it contains and is "not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." In re Heck, 699 F.2d 1331, 1332-33 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009 (CCPA 1968)). See also MPEP § 2123(I).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YOSHITOSHI TAKEUCHI whose telephone number is (571) 270-5828. The examiner can normally be reached on Monday-Thursday 9:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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